The Afghanistan Engineering Support Program assembled this deliverable. It is an approved, official USAID document. Budget information contained herein is for illustrative purposes. All policy, personal, financial, and procurement sensitive information has been removed. Additional information on the report can be obtained from Firouz Rooyani, Tetra Tech Sr. VP International Operations, (703) 387-2151.

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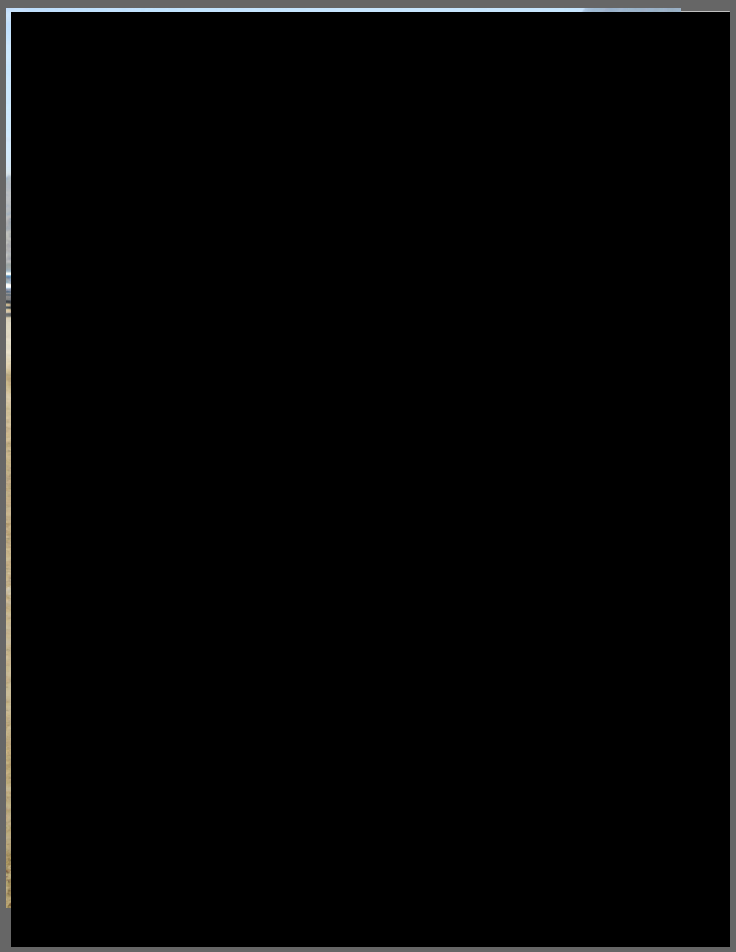
ENGINEERING SUPPORT PROGRAM

WOLT-0042
Afghan Women Internship Program
2012 Final Report



March 4, 2013

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TETRA TECH

March 4, 2013

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Re: WOLT-0042 Afghan Women Internship Program

[redacted]

Enclosed is the 2012 Final Report for WO-LT-0042 Afghan Women Internship Program. The enclosed report summarizes the accomplishments and trainings completed by the 2012 interns on behalf of USAID.

I look forward to meeting with you at your convenience to discuss this report.

Respectfully

[redacted]

Chief of Party (AESP)
Tetra Tech, Inc.

Cc: [redacted] (USAID-OEGI)

AFGHANISTAN ENGINEERING SUPPORT PROGRAM

WOLT-0042
AFGHAN WOMEN INTERNSHIP PROGRAM
2012 FINAL REPORT

March 4, 2013

DISCLAIMER
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Executive Summary

The Mission of the USAID Afghan Women Internship Program at the Tetra Tech Afghanistan Engineering Support Program (AESP) is to provide opportunities for female students enrolled in engineering, architecture, and related programs at universities in Afghanistan to apply skills and concepts learned in a university environment to "real world" situations. While the program is centered on workplace interaction and training to expand the interns' capabilities, the overall focus is to promote gender equality and women's empowerment. Tetra Tech AESP provides the interns with the tools to not just succeed, but to thrive in a male dominated field and culture.

In January 2012, four female civil engineering students from Kabul University were interviewed and selected to participate in Tetra Tech AESP's Afghan Women Internship Program. They spent two days a week interning for one year, from January 2012 through December 2012. In that time, they worked and trained with a variety of engineers in diverse applicable engineering topics and fields.

The year 2012 program covered many engineering workplace topics crucial to the development of the young female engineers' careers. Experience provided by the program included lessons in specific engineering topics, such as wastewater treatment, transportation engineering, and construction site visits, as well as shadowing with experienced engineers from a variety of backgrounds. Other topics covered included basic workplace tasks such as technical writing, document control, presentations, engineering document submittal review, engineering calculations, and training in common engineering software. The program also emphasized women's empowerment beyond the Tetra Tech AESP office, with a special focus on encouraging young women to further their education after high school to pursue education in the math and science fields.

This program, which just completed its first year, provides a general engineering internship structure useful for future engineering internship programs. However, several enhancements will be incorporated into the program for year two. Year two enhancements include:

- Define training required for all interns, including engineering and professional topics
- Outline optional training that each intern may tailor to personal goals
- Define specific requirements, such as quarterly or final reports, a number of presentations, or other specific tasks for each intern
- Expand the schedule to a three-day per week program
- Schedule outreach events to encourage young women in the community to further their education and pursue degrees in math and science
- Associate and align program with other USAID sponsored women internship programs

Year two enhancements will help the internship program grow into an even greater resource to advance young women's educational opportunities in Afghanistan.

1.0 Introduction

The Mission of the Afghan Women Internship Program is to provide opportunities for female students enrolled in engineering, architecture, and related programs at universities in Afghanistan to apply skills and concepts learned in a university environment to "real world" situations. While the program is centered on workplace interaction and training to expand the interns' capabilities, the overall focus is to promote gender equality and women's empowerment. The Tetra Tech Afghanistan Engineering Support Program (AESP) provides the interns with the tools to not just succeed, but thrive in a male dominated field and culture.

2.0 Internship Program

In January 2012, four female civil engineering students from Kabul University were interviewed and selected to participate in Tetra Tech AESP's Afghan Women Internship Program. They spent two days a week interning for one year, from January 2012 through December 2012. In that time, they worked and trained with a variety of engineers in diverse applicable engineering topics and fields. The details of the interns training and working experience is described in the sections below.

Tetra Tech AESP's 2012 internship program covered three areas. The first and main focus of the program was to integrate concepts students learned in diverse engineering programs with practical experience. This was accomplished by providing engineering training programs and discussions to supplement and expand upon concepts learned in the classroom. The second area encompassed other non-engineering, yet essential training pertaining to professional development such as communication and workplace etiquette. The third area, aimed to contribute to social development outside of the Tetra Tech AESP internship program to promote gender equality and encourage participation of female students in math and science.

The interns' main objectives included:

- Solve realistic engineering planning and design problems
- Become familiar with current codes, standards, and specifications
- Develop skills for interacting with practicing professionals
- Develop skills for interacting with individuals outside of the engineering profession
- Participate in women empowerment programs

As part of the internship requirements, all four interns were asked to write a final summary and evaluation of their experiences in the program. These documents can be found in Appendix A.

2.1 Engineering Training

The female civil engineering interns in the Tetra Tech AESP internship program learned engineering skills and professionalism by working on USAID work orders, attending training sessions, and shadowing Tetra Tech and USAID engineers.

2.1.1 Disciplines Covered

All four interns were students of civil engineering. Therefore program topics centered on civil engineering. Engineering topics covered during the internship period emphasized Tetra Tech AESP work orders and civil engineering related disciplines. These topics included:

- Structural Engineering
- Water Resources and Wastewater Treatment
- Transportation Engineering
- Site Design Engineering (Grading, drainage, and utility design)

All four interns had a particular interest in structural engineering and therefore, spent a fair amount of time training with Tetra Tech AESP structural engineers. They participated in design and discussions of reinforced concrete structures such as manholes and foundations. Discussions included emphasis on structural codes (ACI, ASCD, and IBC) and introductions to computer software used by engineering companies in Afghanistan and the United States, such as ETABs, SAP2000, SAFE, STAAD Pro, and AutoCAD Civil 3D.

The interns participated in the work being done with the Tetra Tech AESP Compound water distribution and treatment system, including pressure evaluation, piping system, the water treatment process, and the water heating process. Water treatment was also emphasized using examples from Tetra Tech AESP's wastewater treatment systems at Ghazi Boy's High School, and Sardar Girl's High School, the latter of which was under construction during the period. Two of the interns were particularly interested in the area of water and wastewater treatment and spent extra time working with the Tetra Tech AESP Lead Water and Sanitation Engineer. In depth lessons on complex water treatment systems such as designing wastewater treatment plant unit operations were provided.

Transportation engineering projects were also included as part of the program. Tetra Tech AESP transportation engineers spent time with the interns discussing highway design, including design of horizontal and vertical curves by hand and using AutoCAD Civil 3D, thereby improving the interns' familiarity with AASHTO (American Association of State Highway and Transportation Officials) Green Book specifications.

2.1.2 Engineering Documents

Special emphasis was placed on AutoCAD drawing preparation and shop drawing submittal and review. The interns prepared a presentation on this topic that was presented to both USAID and Tetra Tech AESP staff. The associated PowerPoint slideshow may be found in Appendix B. After the training, they applied these new concepts to actual shop drawing reviews for the Sardar Girls High School work order. Along the same lines, Tetra Tech AESP engineers trained interns in overall quality assurance of engineering documents, including process and protocol.

2.1.3 USAID Shadowing

In December 2012, all four interns visited USAID in pairs to shadow engineers and learn about current USAID projects (including scopes of work), plans and staff. They met with several engineers and held discussions about ongoing USAID work. They also attended meetings to improve their communication skills by interacting with other professional engineers from USAID and associated organizations. Following their experience, the interns collaborated in pairs on two reports summarizing their experiences. These documents may be found in Appendix C.

2.1.4 Site Visits

Three site visits took place during the internship period. The first site visit took place in March 2012, to a completed Tetra Tech AESP project, WO-LT-0005 Ghazi Boy's High School. The Tetra Tech AESP Lead Water and Sanitation Engineer explained the system's design and water treatment concepts.

In July 2012, the Tetra Tech AESP Lead Quality Assurance Engineer took the interns to visit road projects at Chelsotoon and Polytechnic Roads, managed by the Ministry of Urban Development. The site visit covered pavement design and road construction processes, and included meeting with agents from the Ministry of Urban Development.

The third site visit was to Sardar Girl's High School (WO-LT-0006) in October 2012, where ongoing construction of Tetra Tech AESP's sewer line, manhole, and wastewater treatment system design was taking place. The site visit, led by the Tetra Tech AESP Lead Water and Sanitation Engineer, covered design and construction of a wastewater treatment system. Lessons and discussions with site foremen and construction managers outside of Tetra Tech AESP staff also took place.

Table 1, 2012 Site Visits, summarizes the site visits offered to the interns during the year.

Table 1 – 2012 Site Visits

Sites	Applicable Engineering Disciplines	Date
Ghazi Boy's High School Water Treatment System	Wastewater treatment	March 2012
Chelsotoon and Polytechnic Roads Projects	Pavement design Road construction process	June 2012
Sardar Girl's High School Water System	Water supply Wastewater treatment RC manhole structure & construction	September 2012

2.1.5 Software

Software training was provided as participation on USAID work orders and as part of specific training programs offered to the interns. Basic and advanced tutorials for AutoCAD Civil 3D 2010 were provided, which included work on reinforced concrete structures, electrical drawings, water tank drawings, as well as intermediate projects designed to cover broader design topics and practice learned skills. Advanced projects were also used as applied training and included geometric design of horizontal and vertical curves.

Other software training included ETABS, a common structural engineering design software in Afghanistan. This training provided an applied project to participate in the design of a reinforced concrete structure of a multi-story building.

All common Microsoft Office programs, such as Excel, Word, PowerPoint, were used throughout the internship period, with special emphasis on Excel as a tool for structural design aid and other minor applications.

Table 2, Software Training, summarizes the software program training offered to the interns.

Table 2 – Software Training		
Software	**Applicable Engineering Disciplines**	**Training Level**
AutoCAD Civil 3D	Transportation, Architectural and Structural	Intermediate
ETABS	Structural	Intermediate
SAP2000	Structural	Beginner
SAFE	Structural	Beginner
STAAD Pro	Structural	Beginner
Microsoft Excel	All fields	Beginner

2.2 Other Professional Training

Throughout the internship period, the interns were continually exposed to common workplace etiquette beyond typical engineering tasks. This training included topics in communication and professional development.

2.2.1 Communication

Communication is an important aspect in all business settings and is oftentimes not emphasized as strongly in science related fields. It is, however, just as important to include communication as part of any workplace learning experience. Tasks covered under communication included:

- USAID document preparation
- Document control, including filing procedures and structures
- Technical writing (memos, reports, emails)
- Meetings; including etiquette, preparation, and minutes
- Presentations, public speaking, and Microsoft PowerPoint design

A heavy emphasis was placed on PowerPoint design and presentation techniques, including a specific training session regarding public speaking, body language, and visual aids as tools to communicate in both formal and informal presentation type situations. The interns prepared a detailed shop drawing review and submittal presentation, which they presented many times in front of several groups of five to thirty engineers, managers, and peers for feedback and review. The formal presentation (found in Appendix B) was delivered at USAID as an informational question and answer session for USAID engineers. These skills also proved beneficial for brief presentations given to students and staff at Sardar Girl's High School about the importance of young women to continue their education beyond high school, a situation which presented an entirely different and more dynamic public speaking environment.

2.2.2 Professional Development

Upon nearing the end of their internship period, emphasis was placed on skills useful for post internship and graduation employment. These workshops covered:

- Resume review
- Cover letter discussions
- Interview etiquette

The resume workshop included resume structure, examples and discussions on how to appeal to different types of jobs, and how a resume and cover letter interact. Each intern had a chance to discuss their personal resumes for improvement and present revisions for

professional review. Following this, professional interviews were covered, which included actual interviews and individual feedback from the interviewers.

2.3 Gender Studies

The internship program itself is part of USAID's gender empowerment initiative. However, within the internship program, the interns participated in gender empowerment tasks expanded beyond their personal development. As part of a study on the lack of women in engineering and construction, CHECCI Consulting representatives spent an afternoon with the interns and the Tetra Tech AESP engineers involved with the internship program. The purpose was to discuss problems and solutions in regards to the lack of women in engineering in Afghanistan. It served to be very informative about the difficulties women experience in the university and work place and provided some resources for future support. Contact was also made with the Society of Afghan Women in Engineering and Construction (SAWEC) to connect with other Afghan women professionals in the engineering field. Lastly, an informational question and answer session was given at Sardar Girl's High School. The purpose was to teach students and staff about the ongoing construction of the water distribution and wastewater project going on as part of Tetra Tech AESP's project, WO-LT-0006, as well as encourage and inspire young women to further their education after high school, especially in the fields of science and engineering. Many of the young female students expressed great interest in obtaining more information regarding available schooling, exam requirements, and women working in engineering.

3.0 Summary and Analysis

Tetra Tech AESP's 2012 Afghan Women Iinternship Pprogram, performed on behalf of USAID, covered many engineering workplace topics crucial to the development of the young female engineers' careers. Topics included basic workplace tasks such as technical writing, document control, presentations, engineering document submittal review, engineering calculations, and training in common engineering software. Experience provided by the program also included lessons in more specific engineering topics, such as wastewater treatment, transportation engineering, and construction site visits, as well as shadowing with experienced engineers from a variety of backgrounds.

This program, which just completed its first year, provided a general engineering internship structure useful for future engineering internship programs. However, several enhancements will be incorporated into the program for year two. Year two enhancements include:

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Year two enhancements will help the internship program grow into an even greater resource to advance young women educational opportunities in Afghanistan.

Appendices

Appendix A

2012 Intern Final Reports

Internship Final Report

2012 Afghan Women Internship Program

Tetra Tech Company, USAID Contractor

Afghanistan Engineering Support Program (AESP)

Prepared By: [redacted]

Civil Engineer, Engineering Faculty, Kabul University

Supervisor [redacted]

Project Manager

Internship Time Period: 1 Year

January 2012 to January 2013

Table of Contents

Introduction:

This report describes internship period's activates and works undertaken by [redacted] in Tetra Tech. I participated in the Afghan Women Internship Program from January 2012 to January 2013 that was funded by USAID and implemented by Tetra Tech. Various types of tasks form engineering to general skill that are accomplished are listed and discussed in this paper. Some suggestion and recommendations are also added in this report due to improve the future internship programs.

Internship is engaging students in service activities primarily for providing them with hands-on experience that enhances their learning or understanding of issues relevant to a particular area of study. The internship program also contributes significantly and positively towards enhancing the knowledge base and motivational level of students. Benefits include improvements in career-related direction, improved marketability of graduates, job expectations, interpersonal skills, leadership, etc. I can describe internship as a bridge between the theory of the classroom and the world of practice.

The internships are like the complementary courses for the students enrolled in universities, but are necessary programs for the students of engineering faculty. The reason is that engineering is a field which cannot be done only through the theory subjects. An engineer student need to practice engineering and get experience, otherwise they will not be able to use their engineering knowledge in the future when working for an engineering company.

The Afghan Women Internship Program of Tetra Tech Company, provide a good opportunity for female students in engineering faculties in Afghanistan. We had personal computer, a nice working space, expertise engineers around us, professional working environment, and several book shelves with many useful engineering books in our office. The prepared facilities were great. The main goals of this program are to increase the female engineer students' engineering, communication, and real job skills and knowledge.

Experience and Work Assessment:

I worked independently and sometimes was a part of a team effort. I participated in a series of small projects, several trainings, construction site visits, women educational encouragement, meetings, etc . Becoming familiar with the engineering working environment is the most valuable skill that I gained during my internship in Tetra Tech. Working and participating in a real engineering project was my first goal when I enrolled in this internship program. It is necessary for engineer interns to join in a real project and some jobs need to be assigned to them. This is the skill that could not be obtained via classroom teaching or experiential learning.

Project Outline:

- ✓ Structure Engineering
- ✓ Construction Documents
- ✓ Construction Site Visits
- ✓ Water & Waste Water Engineering
- ✓ Communication Skills
- ✓ Computer Programs Trainings
  - Engineering Software Trainings
  - Microsoft Office Programs
- ✓ General Trainings
- ✓ Participation in Women Empowerment Programs
- ✓ General Skills

Table of Activities in Detail:

Date	Activity	Trainer/ Cooperator	Task Description/ Output	Remarks/ Recommendations
January	Security/ Laws & Regulation	[redacted]		
	Staff Introduction		A tour of Tetra Tech office, introduction with the staff, Orientation on the office environment on the first day of working.	Spend sometimes in other Tt departments (Transportation, Electrical …) • To get more oriented about their skills and experience • To increase the communication skills
	Filing System		Projects Introduction, File Location Procedure, References, Codes, and Standards	• It was a good start for using Tt computers • Tt has a structured filing system • Tt guides were sufficiently cooperative
	Introduction & Working on man holes CAD Drawings		Learning reinforced concrete structure of man holes, familiarized with the details of their CAD drawings, and the standard format of a CAD drawing.	We were very interested because of its step by step manner. The guide was very patient, supportive, and instructive.
	Design of Concrete Structures Using Excel Sheets		How to use excel sheets for structural design aids and working on an already prepared excel sheet for working out of a RC man hole structure design.	• It was a useful tool for our future works particularly for our final design project. • More time was needed to be spent on this and also learn on how to make such excel sheets.
	RC Structures Concepts		RC structures introduction, the design process of a RC structure members	The guide has a teacherly manner, very structured and regular schedule, and high knowledge on designing RC structures.

February	CAD Standards	[redacted]	Tt standard drawing procedure tutorials	
	Working on the Electrical Drawings		Standardize the detailing of the electrical drawings as per the Tt standards.	• It was like my first real job and responsibility for completing the task. • The assigned task increased my skills and speed of working on a drawing in AutoCAD. • A good way to evaluate the interns' sense of responsibility and their work quality.
	Visiting Tt Villa Water Tank Piping System		• Familiarized with the water tank system of Tt Villa • Reviewing the water tank piping system • Working on its drawings	It was a good start to become familiar with the small piping system and the water tank system.
	AutoCAD Basic Training		• Some basic tutorial on AutoCAD • Short cuts in Auto CAD • Drawing tools	
	AutoCAD Civil 3D Training		• Comprehensive tutorial on Civil 3D • Horizontal and vertical design of a road using AutoCAD Civil 3D Completed the design of a road	It was a very good structured training and the guide was so patient and resourceful person. Any intern need a tutorial in this engineering software because a good way to practice for road designing.
March	Introduction to Structural Codes (ACI, ASCE, IBC)		Familiarized with the different structural standard codes and their usage. (ACI, ASCE, IBC)	It is a necessary knowledge to know what the different codes during designing a building structure are and when we should use which.
April	Introduction to Structural Engineering Software		An introduction to different and common structural engineering software. (ETABs, SAP2000, SAFE, & STAAD Pro)	Many of our school subjects and projects are related to the structural design of the buildings, so the knowledge we obtained about these software helped me a lot during school and also is helpful for my future career.
	ETABs Training		• ETABs: Extended 3D Analysis of	This training one of my greatest achievements

		[redacted]	Building Systems • Familiarized with this software very well • Working on designing a six stories building with RC structure	during the internship because it was very useful and necessary software for structural design. The training scheduled very well and also completing a project using this software was a good experience.
May	ETABs Training (continued to May)		Completed the design of the ETABs project.	
June	Road Construction Site Visit • Kabul Municipality • Chelsotoon Road • Poly Technic Road		• Met some of the Kabul Municipality staff and had good discussion on future job opportunities • The pre operation of Chelsotoon Road construction (subgrade and sub base concepts/ compaction process/ materials) • The paving process of Poly Technic Road (HMA preparation, its' paving process, construction joints, some defects of the paving work on site)	This site visit helped to understand the concept of pavement design better in practice and also it was good to be introduced with some of the engineering governmental departments. Everyone had a supportive manner with the junior engineer students.
July	Working on the school Project/ Developing of Kabul Driving Manual		Obtained advises and inputs from Tt transportation unit engineers for completing a school project on developing Kabul driving manual.	It was a good opportunity to use from the experiences of Tt engineers for developing my school project in a better way.
August	Exams Season			

September	A visit to Sardar Girl's High School and speaking to the students	[redacted]	Encouraging the girls to continue their education. Talked about our personal educational experience, goals, and achievements.	It was good opportunity to improve our public speaking skills and also take part in such women empowerment programs. It was interesting to hear about the female students feeling and educational plan for the future. It would be better to have more events like that with more preparation on certain useful and interesting topics.
	Construction site visit of Sardar Girls' High School		Learning through observation about different aspects of civil engineering: • Manholes' operation, construction process, and structural design issues • Litchfield and sewer lines concept and operation • The system of water tower in the site	It was a useful observation which helped me more to understand some construction concepts. More construction site visits with a good schedule are recommended. Advanced preparation of the interns on what aspects of construction will be visited in the site is needed.
	Presentation/ Speaking Skills		Learned: • PowerPoint presentation skills • Preparing an attractive presentation • Presenting & speaking skills by getting instruction from guide and having some practice sessions in front of the office staff	I learned a lot about this skill and I think it made me prepared for future presentations. It is a useful skill, so recommended for future internship programs.
October	Shop Drawing (Project Submittals)		• Shop drawings' goal, relation, and role in construction management. Submittal process • Prepared a comprehensive presentation on shop drawing through: team work with other interns, several meetings with expertise engineers in this field, and researching. • Presented the mentioned presentation to USAID audience at	It was a great experience in the sense that it provided us with an opportunity to work in a team and interact more with our colleagues. This job was assigned to the interns' to accomplish it with in a determined deadline which increased the sense of responsibility of interns. It is a good evaluation tool to assess the interns' performance.

		[redacted]	the USAID compound.	
November	Working on Wastewater Treatment Plant Project		Learned much knowledge on water/ sanitation projects and obtained much information on designing small / large scale wastewater treatment plant facilities.	The guide is a knowledgeable, resourceful, and supportive person on this subject. It was a useful and interesting experience for me.
	Participating in Women Olympic Competition 2012		• Encouraged to do sport • A good chance for expats and Afghans women of Tt staff to know more each other • Team building skills • Trained on some sports	It was fun and we enjoyed a lot. Better to continue having such programs in addition to our work.
	AutoCAD 2010 Training		Intermediate 2D AutoCAD tutorials. Tt standard drawing procedure tutorials.	A very useful tutorial. Well-scheduled program. Better to be planned at the initial stages of the internship program.
December	Shadowing USAID Office Engineers		Exposed with a new working environment, attended a real live meeting, interacted with different engineers and discussed about various engineering topics such as road maintenance.	Useful but short term. More frequent shadowing programs in different engineering environment (IRD, Governmental Offices, etc.) Better to be more structured and scheduled.
	Resume Writing		Talked around general rules on preparing a good resume.	The guide was so supportive to assist the interns in learning this useful skill.
	Interview Skills		Talked around general interview issues such as types of questions and appropriate behavior during interview.	Have some interview practice, so that the interns are prepared for future job interviews.
	Meeting on Women Engineers' Support Programs		Discussed on the problems of women engineer students and suggested the related solutions We also discussed about the advantages of internship program for female	That was a great meeting. The more we attend in such meetings, the more our communication, problems analysis and solving will be improved. We will be more informed about the female engineers' problems and challenges and take part in

			engineer students.	women empowerment programs.
	Submittals Review	[redacted]	Familiarized with submittals in construction management and process to review them. Reviewed a real submittal based on the construction document and specs and the required actions.	It was interesting to work on a real submittal. The guide was patient and explained everything like a colleague. It was beneficial to spend more time on reviewing construction submittals or to be involved in this important task. It could be one of the tangible skills that the interns shall obtain.

Summary:

Training Sessions

During this internship program we had several trainings which improved my engineering, communication, and other general skills and knowledge. Those trainings helped me doing my school projects very well and also will help me in my future engineering career. We had some training on general topics like presentation skills, public speaking and communication skills, resume writing, interview skills, etc. which are discussed in details in the table. The other very important types of trainings we had during our internship are the engineering software trainings like AutoCAD Civil 3D, ETABs (Extended 3D Analysis of Building Systems which is a structural analysis and design software), and AutoCAD 2D tutorials. They are the very useful, necessary, and important software for any civil engineering student to learn that help them in both their school projects and their future career. It is very effective program for interns because their skills on the mentioned trainings will be improved side by side with the load of their school studying and at the time they graduate they have enough experience and skills to work as a civil engineer.

Suggestions

- More scheduled program for trainings
- Better to schedule the engineering software training based on the interns' school subjects
- Good to completing a project after finishing each software training
- More assigned tasks related to the trainings (The trainings is better to have not only learning aspect, but also the interns should be assigned to do some tasks for the office. This way will encourage them to be more serious in learning.)
- Better to have some architect expertise trainer on AutoCAD training
- Add some trainings on cost estimation and their related software like MS Project and Primavera
- More training on English writing skills

Site Visits

The site visits are very good and necessary experience and good opportunity for interns to go to other working environment other than their school and office. The site visits are beneficial for interns in m any ways. The interns will know what is happening and progressing in the site, what the onsite challenges are for engineers, and how they face with those challenges. So, it is a good chance for them to ask and solve their questions because there are many expertise and various engineers in the site. They also will understand their school subject better in a practical way. It will be clearer for them on how to apply their engineering knowledge and skills in the field and what are the other skills that they need to improve. I had some construction site visits in different engineering fields during the internship period in Tetra Tech. One of the very interesting and effective site visits was going to observe the road construction process. We learned many things in site which are mentioned in the table.

Suggestions

- More site visits in different engineering fields
- Submitting report from interns after each site visit
- Scheduling the site visits based on the interns school subjects (Ex. visiting a wastewater treatment plant will not be effective if the interns are not already studied the wastewater engineering subject at school. So, no knowledge, no question will raised in mind, and no learning from the site visit.)
- Preparation of the interns before going to the site (they need to know what they will observe or have some review of the site drawings and data.)

General Skills and Meeting:

Working in Tetra Tech and attending in many meetings had many advantages. It improved my communication skills and also be familiarized with professional engineering working place. The interns will not be more shy, inexperienced, silent, and immature engineer. The other advantages of this issue is that the interns beneficiate from the experiences and knowledge of other expertise engineers. They will be prepared for working in any other office and interacting with different people. The meetings, other obtained general skills, and some recommendations are explained in the table.

Suggestions

- More interact with different staff of other offices of Tetra Tech
- More involved in monthly or weekly meetings
- Monthly report from interns

General Recommendations:

- Work more on reviewing submittals
- Have more assigned tasks
- Be more involved in Tetra Tech projects
- Have some real job on designing, reviewing submittals, etc.
- Have more site visits
- Attend more in meetings (Attended by USAID, Tetra Tech, etc.)
- Work on some water supply, transportation, wastewater, etc. subjects
- Submission of reports from interns at least monthly and also after each site visit
- Ask for interns' suggestions in their monthly report to improve the internship program and know the interns need
- Have various role position in office
- Have three half day during school is more effective

Conclusion:

The Afghan Women Internship Program was a successful program. I am so thankful of USAID for funding and Tetra Tech for implementing this program. Tetra Tech by providing the all the necessity facilities, meaningful opportunities for work experiences to engineering students and, a good follow up made this program successful. This program is a route to the young engineers' growth and encourages them more to education and work.

During school I was thinking that after graduation I am not prepared for work. My plan was to stay at home for at least one year, study engineering subject, and prepare myself for work. But during my internship in Tetra Tech I realized it that I am ready and qualified enough to work as an engineer. I feel more confidence on me now and very excited to work. Now, I feel that I can do any challenging engineering position and will be a hardworking, reliable, and innovative engineer in any company that I will work. The most important lesson I obtained through my internship is that the more the students work in the working environment the more they become mature in their fields of study and the only thing every student need is to get experience.

I hope the outline, details, and suggestion in this report will be helpful for the next internship programs and also this successful internship program will encourage other engineering companies and organizations to join in providing meaningful work experiences to engineering students.

Acknowledgements:

This internship program could not have been a success without the vital contributions, assistance, support, and knowledge of some of the Tetra Tech staff during the internship.
Many thanks to the following persons for their support, encouragement, and guidance during my internship:
[redacted], Civil Engineer, Tetra Tech
[redacted], P.E, Water/ Sanitation Sector Lead, Tetra Tech
[redacted]Structural Engineer, Tetra Tech

Internship Program Final Report

Tetra Tech AESP Afghan Women Internship Program 2012

By: [redacted]

Academic Supervisor: [redacted]

Submission date: 3rd Jan, 2013

Acknowledgements

All the praises are for the almighty Allah who bestowed me with the ability and potential to complete my internship period in Tetra Tech AESP, which started on January, 2012 and ended in December, 2012.

I here with want express my special thanks to my helpful supervisor, [redacted] Her support was truly helpful in the progress and quality of the internship program. My grateful thank also go to [redacted] for all his honesty, struggle and hard work towards provision of helpful training topics and practical work. I also would like to extend my thankfulness to the rest of Structural and Transportation department engineers for patiently guiding me through challenges while I was working here as an intern.

Executive Summary

Going further I would like to describe the summary of what I have done, learnt, contributed and challenges within the period of internship during the last one year in Tetra Tech. During my internship I could not describe my job title with TetraTech rather than intern, due to being involved in training with all departments in the villa especially in Structural and Transportation Department. In my training course I tried to apply the theories, concepts, principles, techniques, skills and knowledge that I had learned from the university.

Learning Objectives and Trainings

My learning objectives have been accomplished beyond my imagination. I have learnt and absorbed a lot of information and it has given me the confidence and eagerness to graduate and start my career without any stress in mind that I had anticipated and was thinking of before the internship period. Below is a simple explanation of some major experience and skills I have gained during this internship.

- In transportation field I have learnt Geometric Design of highways which involves a number of fundamentals and concepts that guide and control the road design. These include highway types, design controls, sight distance, and simple highway curves.

- I have been trained on how to put the abovementioned fundamentals into practice via AutoCAD Civil 3Das a result I am able to design a roads considering all important aspects and factors of design and I am well familiarized to a policy on geometric design of highways and streets [AASHTO, Green Book].
- In structural field I have learnt how to model, analyze, and design a multi-story building by using the engineering software and tool ETABS as well as learning the use of reference books such as ASCE to find the parameters needed to provide input for the software while designing a building., I have also been trained on structural CAD drawings of floor plan, foundation plan, beam, column, wall section details as well as the CAD standards of the company. Moreover, I could better improve my skills in

engineering software if I were allowed to take my PC to the office, but Mr. Behroz gave me some books essential guidance for my self-learning in engineering software.

Site Visits

Site visits added incredible experience to our career pertaining actual construction work and or projects and the actual construction environment. I found these site visits to be very useful and interesting as they have enabled me to see theory being put into practice and gain invaluable knowledge.

- We were given a brief review of the wastewater treatment process at Ghazi boys High School (GBHS) before site visit and then taken to the site and was given a second brief on waste water treatment plant process and varying parts functions as well as a whole system operation.
- Next, we were taken to the site visit to a road project under construction. We were able to inspect the filling material and compaction process we were then headed to a second road under construction project and were given a brief on road alignment (drainage, formation level, base courses, blacktop and landscaping).
- We were also shown the sewer system works such as the construction of septic tanks, piping and sewer/ water manholes as well as the process of digging a well and flushing of turbid water of well at Sardar Girls High School.

All with the opportunity to ask questions from various section engineers, site engineers, foreman, and site manager.

Communication and Presentation Skills

The ability to communicate is a vital factor to all types of career development. Without adequate communication skills it is possible that there will be little movement upwards. Working at TetraTech helped me improve my communication skills as well as my presentation skills. It

helped me develop my self-esteem. I was given a chance to communicate with people of the company if we required any information.

Shadowing program set by my supervisor in my area of interest at USAID was another opportunity of improvement and experience in:

- Improving my communication skill
- Gaining self-confidence in talking with professional people
- Added assistance to my decision making skill.
- And overall in providing valuable networking and social contacts

Furthermore, we presented two group presentations to USAID and Sardar Girls High School (SGHS) during the internship period. The presentations we presented to USAID were about shop drawings review and submittals. All the civil department engineers assisted us in better performance and development of a standard and professional presentation as a result I gained sufficient understanding of the submittal process and shop drawings review. Initially I had a fear of public speaking. Though I was used to present very often presentations in front of students and teachers in my school, but this was the first time I had given a presentation in a company. The presentation which we gave to SGHS was to encourage the girls of high school to engineering profession and overall higher education and this had a positive impact on changing their minds regarding the phrase/idea “engineering has always been a male-domain profession".

These presentations helped me boost my confidence. Now I am a better presenter, who has learnt that not only the content of the presentation is important but also the voice, articulation, appearance and the body language is very important part of the presentation skills.

Observations and Conclusion

In Tetra Tech I have learned how they are working, what are the main responsibilities for each employee in each department, the main departments and the main tasks of each one of them.

As a site engineer they were given the responsibility of preparing and maintaining all of the Quality Assurance (QA) documentation regarding the construction sites to which they were assigned. The QA documents basically provide a system in which to monitor the progress and quality of the construction processes ensuring that it is done in a safe manner according to the acceptable standards, specification and design drawings.

My training course in civil department of Tetra Tech has not only met all of my expectations which was involvement in ongoing projects on my major goals and specialization ‘Structure’ and or my minor specialization ‘transportation’ but we did achieve the best of learning more and had an incredible experience of general engineering fields that will help me in my future's job.

I would like to appreciate the organization’s supervisors for being very patient, helpful, and kind during doing the work observation and trainings, for many students this training will be the first time that they have the real job and most of them do not have a high level of communication and technological skills and the proper information on how to do the work.

Overall, my internship course gave me a useful experience that will help me in the future. First, it will enhance my resume with career related experience. Secondly, it extensively developed my understanding and knowledge about my chosen field (structural design) and how it can be applied with different workplaces. Third, I have learned many of the career-related skills such as, good public speaking, report-writing, and the communication skills which are needed for a professional engineer to carry on with, in his/her major.

TETRA TECH

AESP

INTERNSSHIPS

Annual Report 2012

Prepared by: [redacted]

Supervisors : [redacted]

Introduction :

Tetra Tech, Inc. was founded in 1966 to provide engineering services related to waterways, harbors and coastal areas. Over the past 40 years, the Company has substantially increased the size and scope of its business and expanded its service offerings through a series of strategic acquisitions and internal growth.

Tetra Tech now provides environmental services, water/wastewater management, infrastructure services, security design, and outsourced technical services.

Today, Tetra Tech has approximately 13,000 employees located in more than 330 offices worldwide.

The USAID KCI project will help city officials improve services to Kabul citizens in key areas including sanitation, solid waste, streets, and parks. The project also promotes the understanding of the responsibilities of municipal leaders and encourages citizens to participate in the decision-making process.

Women Internship program is a very beneficial project of tetra tech that can help afghan Engineer girls in all Engineering field .

Annual Internship Activity Report 2012

Activities instructors

- ✓ Worked on a concrete tank Excell sheet [redacted]
  [redacted]
- ✓ AUTOCAD (Civil 3D) [redacted]
  [redacted]
  (Project Assignment Design of vertical and horizontal curve on a road)
- ✓ Engineering software (ETABs) [redacted]
  [redacted]
  (Project Assignment worked on 3^{th} floor Building)
- ✓ AUTOCAD (2010) [redacted]
  [redacted]
  (Project Assignment Drawing of a section)

- ✓ Shop Drawing Presentation (

Site visite:

- ✓ Sardar Girl students (sewage systems)
- ✓ Ghazi Boy High School (waste water treatment plant)
- ✓ Pavement Construction

Conclusion :

Internship program was very help full for me and I learned many subjects like :

Engineering software (AUTOCAD Civil 3D ,ETABs, AUTOCAD 2010),

We had some site visit in different projects, and we worked on shop drawing presentation with tetra tech team , and we learn how to work in a office .

Suggestions :

- If it possible 2day increase for 3day
- Intern had a schedule of work
- If site visit become more
- Presentation become more

- If intern take part in some project of tetra tech
- And each intern write a report of work every month it is very help full in report writing .

Appendix B

Shop Drawing Presentation

USAID - Tetra Tech

Purpose: Details on Shop Drawing

8 October, 2012

SHOP DRAWINGS

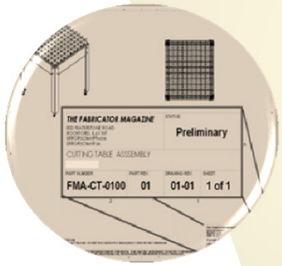
PROJECT SUBMITTALS

Tetra Tech Interns:

[redacted]

How Shop Drawings Fit into Construction

Book Keeping; Log-in Spread Sheet / Evaluation Form



An Example of the Shop Drawing Review Process

Limits of Liability

USAID
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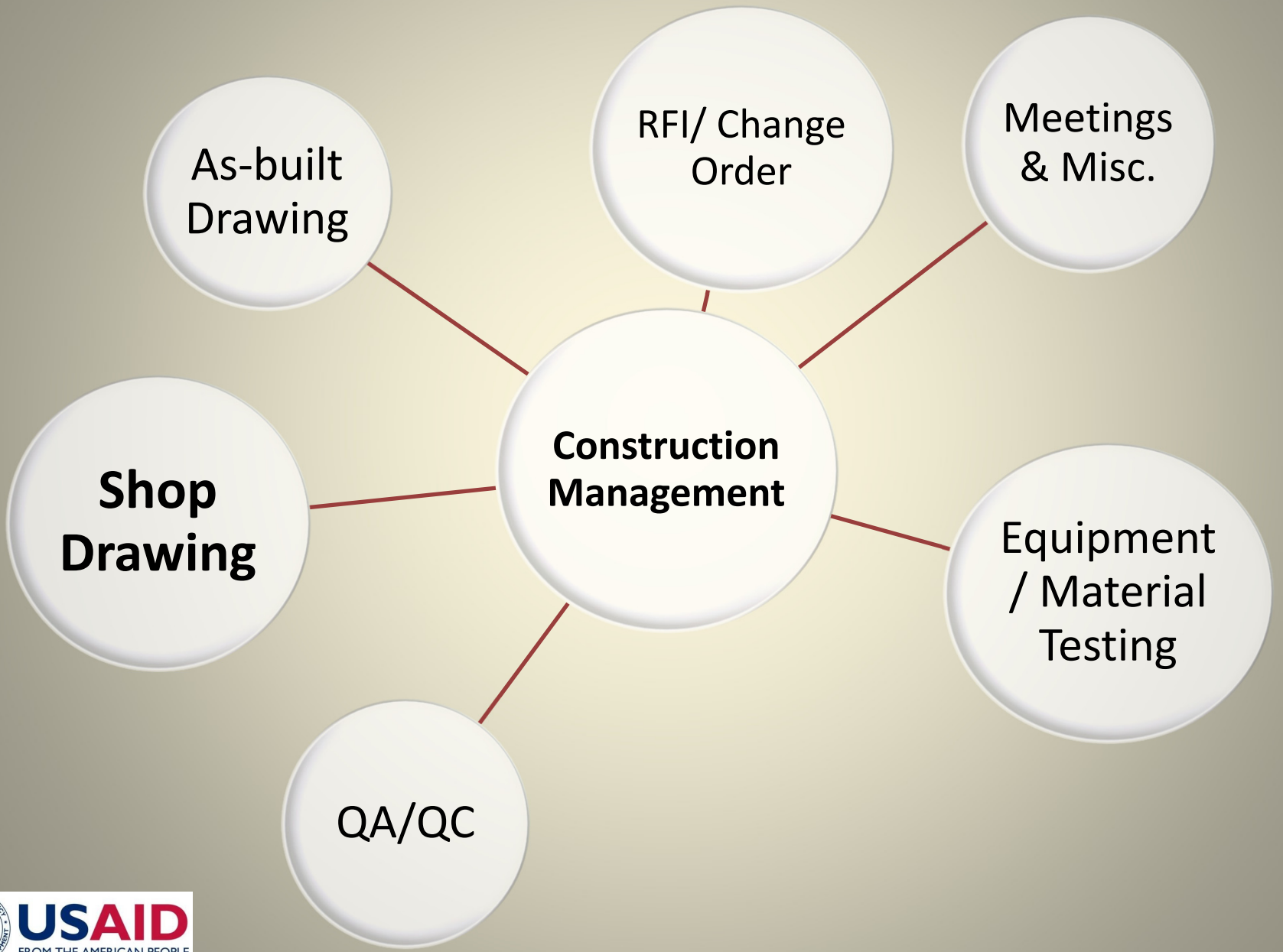
How Shop Drawings Fit into Construction



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Definitions

Contractor:

- Contracts with an employer to do a particular piece of work.

Sub-Contractor:

- Performs part or all of the obligations of another's contract

A/E:

- Architect or Engineer

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How Shop Drawings Fit into Construction

WHY

- Compliance with contract docs.
- Eliminate potential errors

WHO

- Prepare…..Sub-Contractor
- Review…….A/E

HOW

- Review
  - Changes
  - Quality
- Evaluate

USAID
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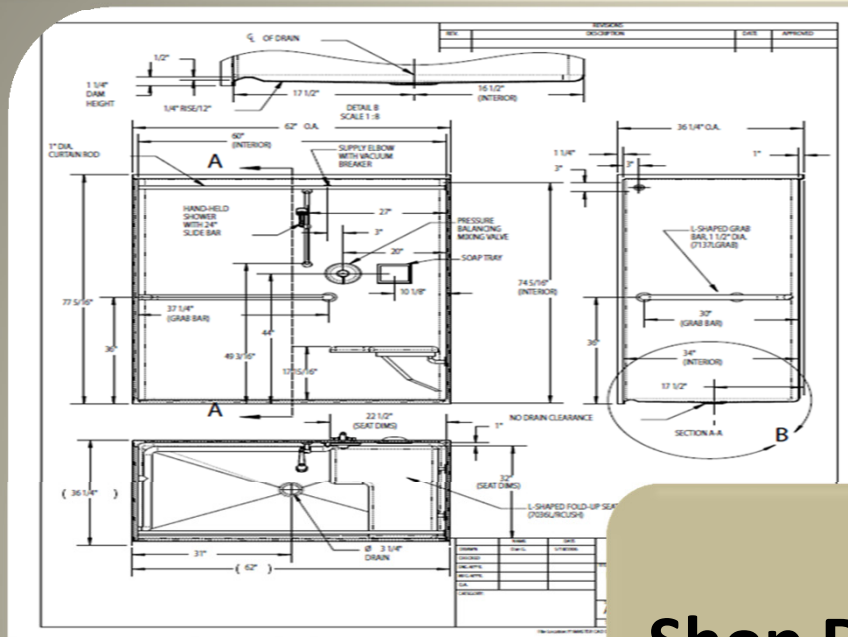
How Shop Drawings Fit into Construction



Sardar Girls High School
Kabul, Afghanistan

SSPC Paint 25	(1997; E 2004) Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
SSPC SP 3	(1982; E 2004) Power Tool Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning

1.2 SYSTEM DESCRIPTION

Provide the structural steel system, including shop primer, complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with ANSI/AISC 360 and ANSI/AISC 341 except as modified in this contract.

1.3 SUBMITTALS

Contractor shall submit the following using procedures as specified in the Contract Documents.:

wings

drawings including description of connections

ata

Shop Drawing

RADSAN

Üretimde kalitesi ile yarışan RADSAN değişen şartlara göre AR-GE çalışmaları ile yeni tasarımlarla ürün yelpazesini genişletmektedir. RADSAN TS EN ISO 9001:2000, TS EN ISO 14000 ve TS EN ISO 18000 sertifikaları ile çağdaş bir dünya firması olmayı, üretim konusu ile ilgili uluslararası standartların da çoğuna(IEC, EN, IEEE, NFPA, UL...) uygunlukla dünyanın birçok yerinden talep edilmeyi sağlamıştır.

RADSAN uzun yıllara dayalı bilgi, dökümantasyon birikimini müşterileri ile paylaşmaktadır. Bu paylaşım danışmanlık, proje hazırlama, uygulama alanlarında profesyonel anlamda da sürdürülmektedir.

Competing with its turing, RADSAN with new designs according to the chang achieved to be a modern EN ISO 9001:2000, TS EN ISO 18000 and to be dema World with its compliance with many internatio-nal standards related to the production (such as IEC, EN, IEEE, NFPA, UL, etc.).

RADSAN shares its knowledge and documentation accumulated for many years with its customers. Also, this sharing is continued professionally in consultancy, project design and implementation fields.

KENLER / COPPER CONDUCTORS

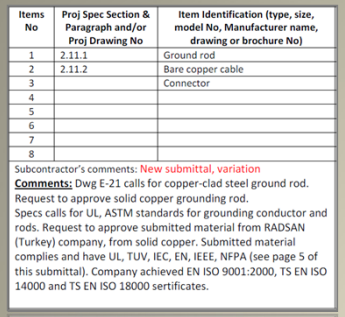
Conductors

Kod Code	Malzeme/Kaplama Material/Coating	Kesit Cross Section	Çap Dia.
CS-00	B	1,5 mm²	1,36 mm
CS-01	B	2,5 mm²	1,76 mm
CS-02	B	4 mm²	2,2 mm
CS-03	B	6 mm²	2,8 mm
CS-04	B	10 mm²	4 mm
CS-05	B	16 mm²	5 mm
CS-06	B	25 mm²	6 mm
CS-07	B	35 mm²	7 mm
CS-08	B	50 mm²	8 mm
CS-09	B	70 mm²	10 mm
CS-10	B	95 mm²	12 mm

Örgülü Bakır İletkenler
Bare Stranded Copper Conductors

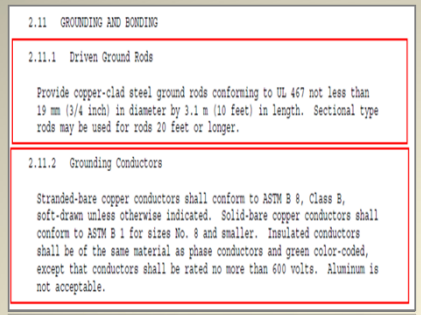
Kod Code	Malzeme Meterial	Kesit Cross Section	Çap Dia.
CO-04	B	10 mm²	4,1 mm
CO-05	B	16 mm²	5,1 mm
CO-06	B	25 mm²	6,4 mm
CO-07	B	35 mm²	7,6 mm
CO-08	B	50 mm²	9 mm
CO-09	B	70 mm²	10,7 mm
CO-10	B	95 mm²	12,5 mm
CO-11	B	120 mm²	14,2 mm
CO-12	B	150 mm²	15,9 mm
CO-13	B	185 mm²	17,7 mm
CO-14	B	240 mm²	19,8 mm

How Shop Drawings Fit into Construction



Items No	Proj Spec Section & Paragraph and/or Proj Drawing No	Item Identification (type, size, model No, Manufacturer name, drawing or brochure No)
1	2.11.1	Ground rod
2	2.11.2	Bare copper cable
3		Connector
4		
5		
6		
7		
8		

Subcontractor's comments: New submittal, variation
Comments: Dwg E-21 calls for copper-clad steel ground rod. Request to approve solid copper grounding rod.
Specs calls for UL, ASTM standards for grounding conductor and rods. Request to approve submitted material from RADSAN (Turkey) company, from solid copper. Submitted material complies and have UL, TUV, IEC, EN, IEEE, NFPA (see page 5 of this submittal). Company achieved EN ISO 9001:2000, TS EN ISO 14000 and TS EN ISO 18000 sertificates.



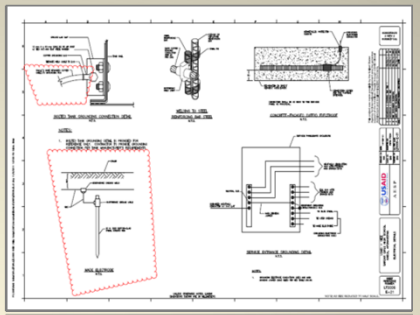
2.11 GROUNDING AND BONDING

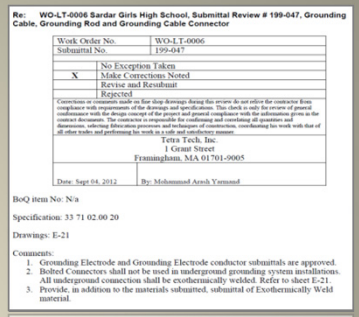
2.11.1 Driven Ground Rods

Provide copper-clad steel ground rods conforming to UL 467 not less than 19 mm (3/4 inch) in diameter by 3.1 m (10 feet) in length. Sectional type rods may be used for rods 20 feet or longer.

2.11.2 Grounding Conductors

Stranded-bare copper conductors shall conform to ASTM B 8, Class B, soft-drawn unless otherwise indicated. Solid-bare copper conductors shall conform to ASTM B 1 for sizes No. 8 and smaller. Insulated conductors shall be of the same material as phase conductors and green color-coded, except that conductors shall be rated no more than 600 volts. Aluminum is not acceptable.





Re: WO-LT-0006 Sardar Girls High School, Submittal Review # 199-047, Grounding Cable, Grounding Rod and Grounding Cable Connector

Work Order No.	WO-LT-0006
Submittal No.	199-047
	No Exception Taken
X	Make Corrections Noted
	Revise and Resubmit
	Rejected

Tetra Tech, Inc.
1 Grant Street
Framingham, MA 01701-9005

Date: Sept 04, 2012 By: Mohammad Arash Yamand

BoQ item No: N/a

Specification: 33 71 02.00 20

Drawings: E-21

Comments:
1. Grounding Electrode and Grounding Electrode conductor submittals are approved.
2. Bolted Connectors shall not be used in underground grounding system installations. All underground connection shall be exothermically welded. Refer to sheet E-21.
3. Provide, in addition to the materials submitted, submittal of Exothermically Weld material.

- **One** • Typically prepared by subcontractor/vendor
- **Two** • Then submitted to GC for review
- **Three** • GC forward them to A/E for approval
- **Four** • Then drawings are sent back to GC to given to subcontractor/vendor
- **Five** • Depending on action taken by A/E, fabrication usually begins or material order is placed

Evaluation Form

- Documentation
- Evaluation criteria
- Disclaimer
- Comments

Date: Sept 04, 2012

[redacted]
USAID Café Compound
Great Massoud Road
Kabul, Afghanistan

Re: WO-LT-0006 Sardar Girls High School, Submittal Review # 199-047, Grounding Cable, Grounding Rod and Grounding Cable Connector

Work Order No.	WO-LT-0006
Submittal No.	199-047

	No Exception Taken
X	Make Corrections Noted
	Revise and Resubmit
	Rejected

Corrections or comments made on fine shop drawings during this review do not relive the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

Tetra Tech, Inc.
1 Grant Street
Framingham, MA 01701-9005

Date: Sept 04, 2012	[redacted]

BoQ item No: N/a

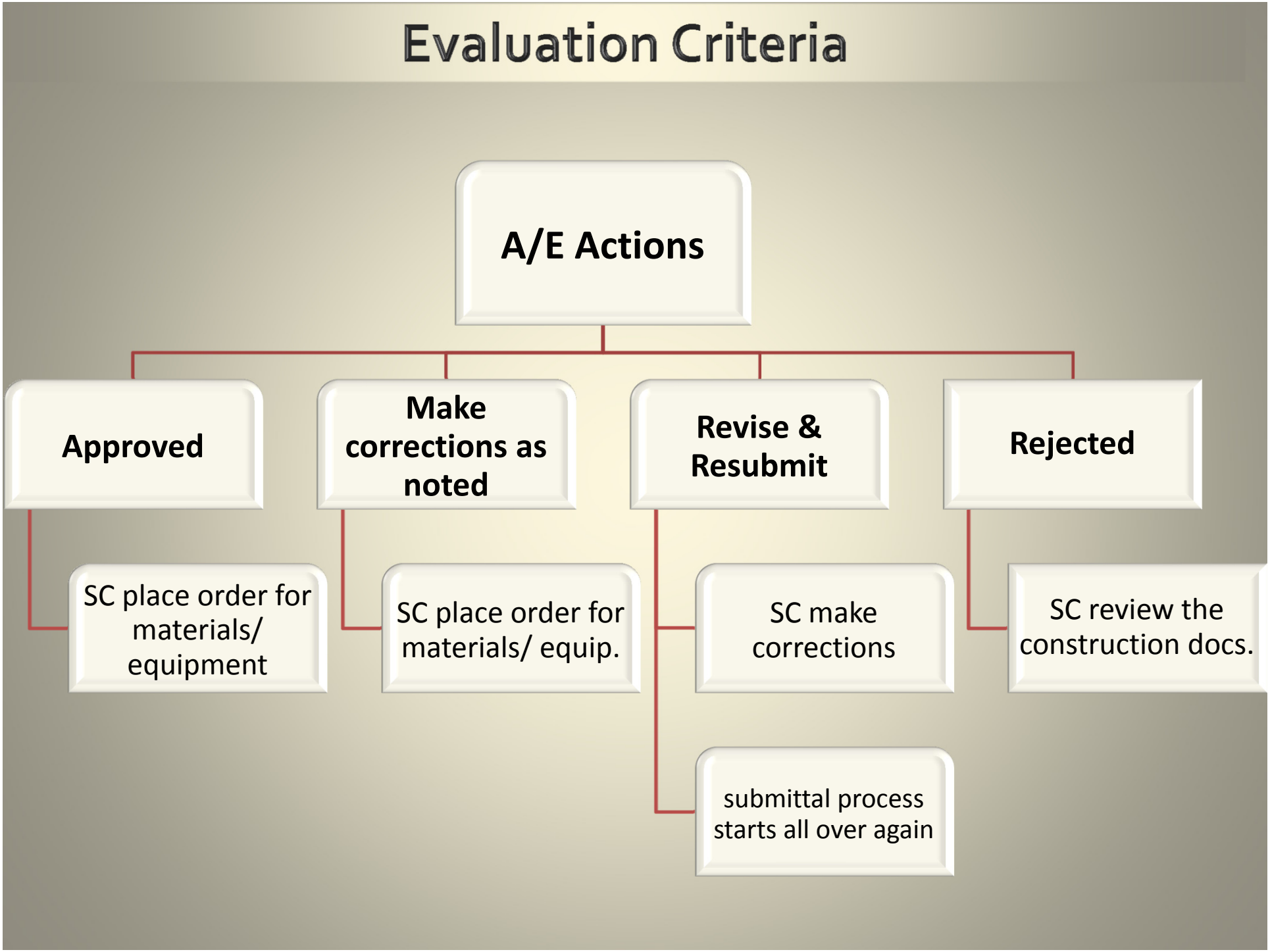
Specification: 33 71 02.00 20

Drawings: E-21

Comments:

1. Grounding Electrode and Grounding Electrode conductor submittals are approved.
2. Bolted Connectors shall not be used in underground grounding system installations. All underground connection shall be exothermically welded. Refer to sheet E-21.
3. Provide, in addition to the materials submitted, submittal of Exothermically Weld material.

Evaluation Criteria



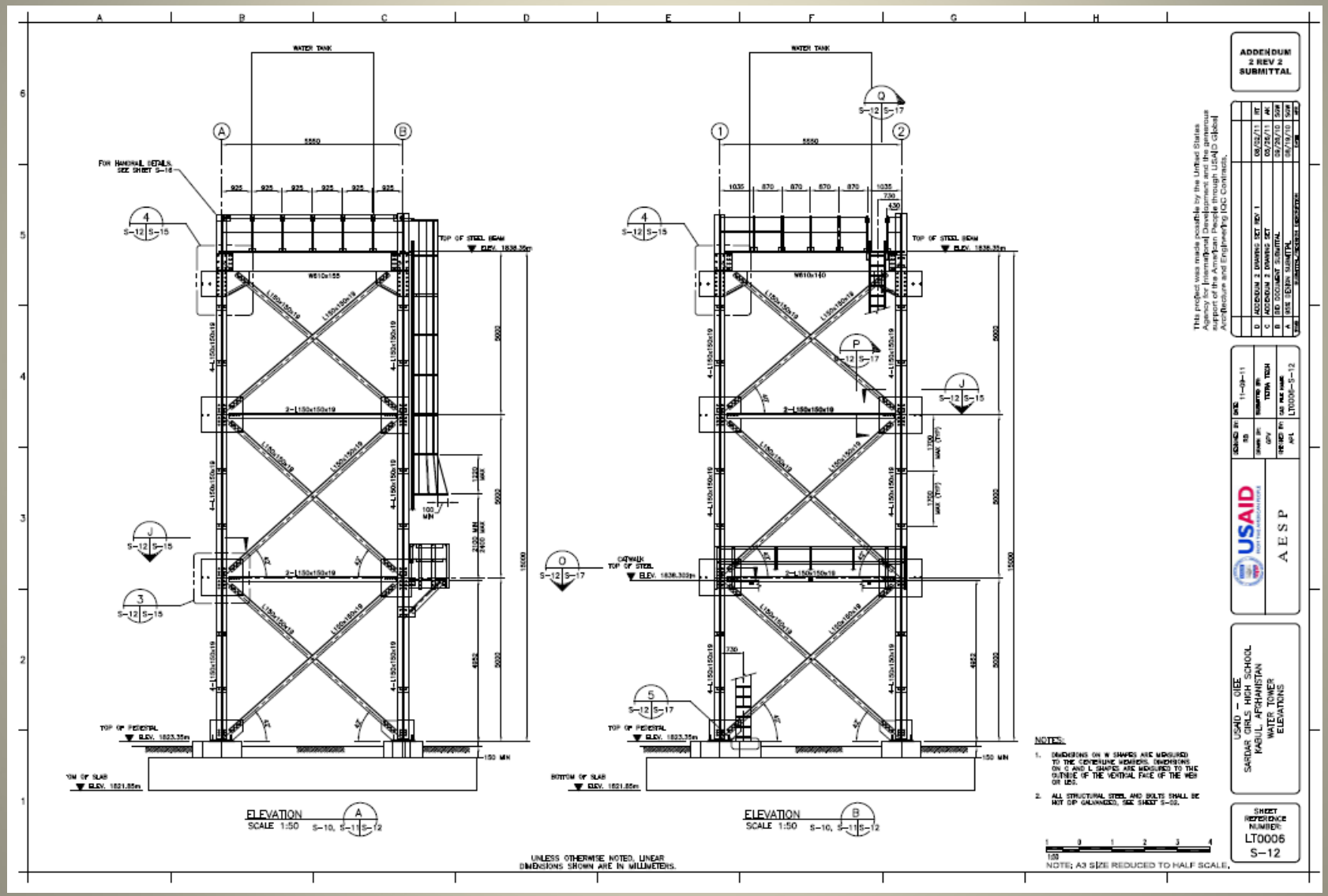
Log-in spread sheet

SHOP DRAWING AND SAMPLE RECORD

DATE: 02/09/12
TETRA TECH ARCHITECTS & ENGINEERS PROJECT. NO.: WO-LT-0006

Date Received USAID	Title	BoQ Item	Specification Section	Drawing Number	Reviewer	Action				Date to USAID	Status
						No Exception Taken	Make Correction Noted	Revise and Resubmit	Rejected		
	Civil										
08/26/12	Bolted Steel Water Storage Tank	4.01	33 16 15	U-90-U-93	TT		X			08/29/12	Complete
08/26/12	UPVC Schedule 40 Gravity Sewer Pipe	N/A	N/A	N/A	TT	X				08/29/12	Complete
08/26/12	PVC Schedule 80 Water Pipe	N/A	N/A	N/A	TT	X				08/29/12	Complete
08/28/12	Shop Drawings of Water Tower and Fabrication Company Profile	4.15 & 4.16	05 12 00	S-10 & S-12-S-17	TT				X	08/29/12	Complete
08/29/12	Paint for Roads & Streets	6.03	32 17 23	C-12,C-13	TT	X				09/02/12	Complete
08/29/12	Well Installation Plan	4.03	33 20 00	U-30-U31	TT			X		09/02/12	Complete
08/30/12	Well Riser Pipe & Fittings	4.04	43 21 39	U-30-U31	TT					09/02/12	Complete
08/29/12	Aggregate Base Course Mix Design	2.02	32 11 23	C-30	TT					09/02/12	Complete
08/30/12	UPVC Schedule 40 Fittings-Gravity Sewer System- (Royal)	3.01, 3.02, 3.02A	33 30 00	U10 to U13	TT	X				09/03/12	Complete
08/30/12	PVC Schedule 80 Fittings-Water Distribution System- (Spears)	4.10,4.10A, 4.11, 4.12, 4.13	33 11 00	U10 to U13	TT	X				09/03/12	Complete

SHOP DRAWING EXAMPLE | *CONSTRUCTION DRAWINGS*



SHOP DRAWING EXAMPLE | *SUBCONTRACTOR'S SUBMITAL TRANSMITTAL*

Items No	Proj Spec Section & Paragraph and/or Proj Drawing No	Item Identification (type, size, model No, Manufacturer name, drawing or brochure No)
1	1.3	Water tower shop drawing + company profile
2		
3		

Subcontractor's comments:
Due to lack of some material(structural steel) in Afghanistan market we are requesting the following changes:
1- USAID drawing: As it shown in drawing (L 150x150x19) structural steel. Shop drawing: changed to L 150x150x15 structural steel.
2- USAID drawing: C 250x30 channel. Shop drawing: changed to C250x125.
3- USAID drawing: W610x140 Shop drawing: changed to I beam 500x250

SUBCONTRACTOR'S SUBMITTAL TRANSMITTAL

Prime-Contract No: *AID-306-I-00-11-00508*

Transmittal No: **05 12 00** | Date: August **17, 2012**

Subcontract No: *199-S-001*

From Subcontractor: *Equinox Engineering & Construction*

Project Title and Location: *USAID VS RFTOP 306-12-016, Sadar Girl's High School Site Layout, Grading, and Utilities Contract. Kabul, Afghanistan*

Submitted to: *Perini Management Services, Inc.*

SUBCONTRACTOR USE ONLY | *REVIEWER ONLY*

specification division per form)

Yes ☐ No ☑

ACTION CODES
A-approved
D-disapproved
AN-approved as noted

oj Spec Section & aragraph and/or roj Drawing No	Item Identification (type, size, model No, Manufacturer name, drawing or brochure No)	No of copies	Action codes	Reviewer's Initials, Code & Date
	Water tower shop drawing + company profile			
6				
7				
8				
9				
10				

Subcontractor's comments:
Due to lack of some material(structural steel) in Afghanistan market we are
changes:
shown in drawing (L 150x150x19) structural steel.
L 150x150x15 structural steel.
30 channel. Shop drawing: changed to C250x125.
140 Shop drawing: changed to I beam 500x250

Material availability:
Stock onsite: n/a
Availability: Available on Market

iewer: [redacted] Date: August 17 ,2012

ger: Date: August 17 ,2012

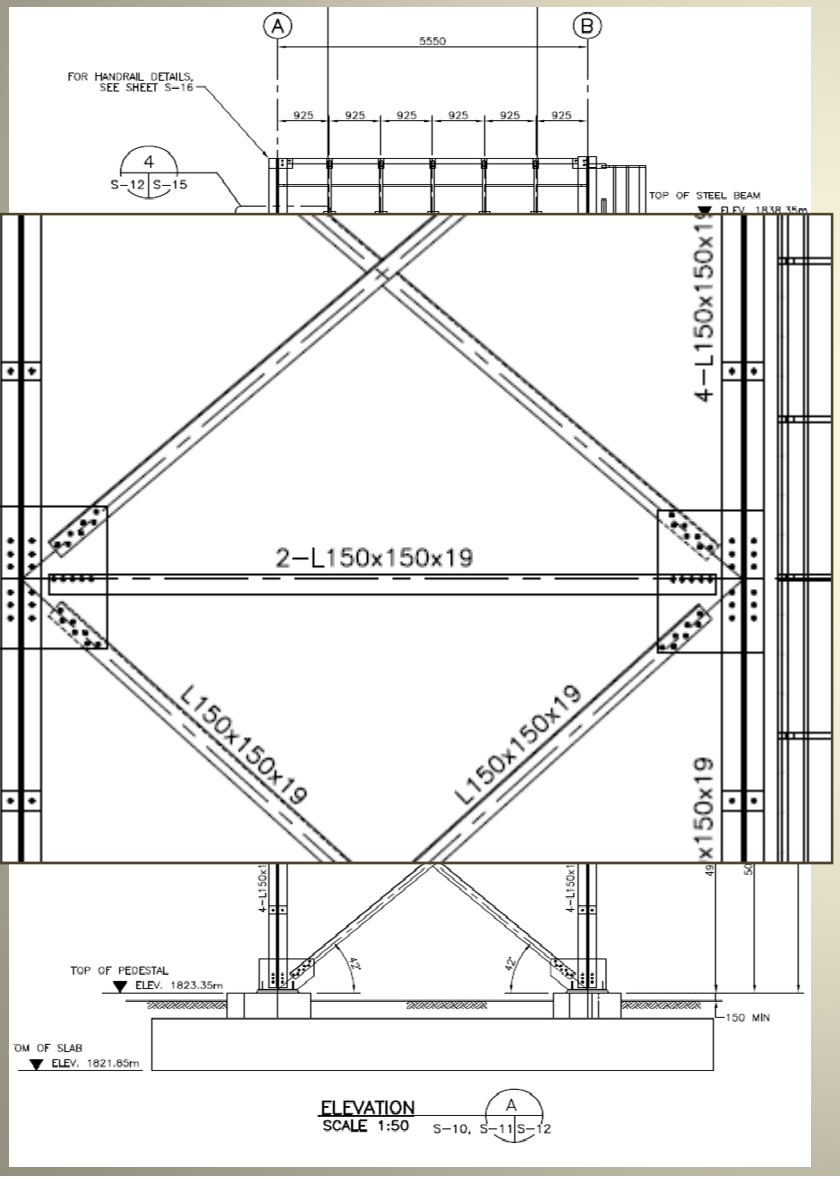
ubmitta Contractor Representative (signature)

		Reviewer Signature:		Date returned to Contractor:	
Copies to:		Date:		Signature:	

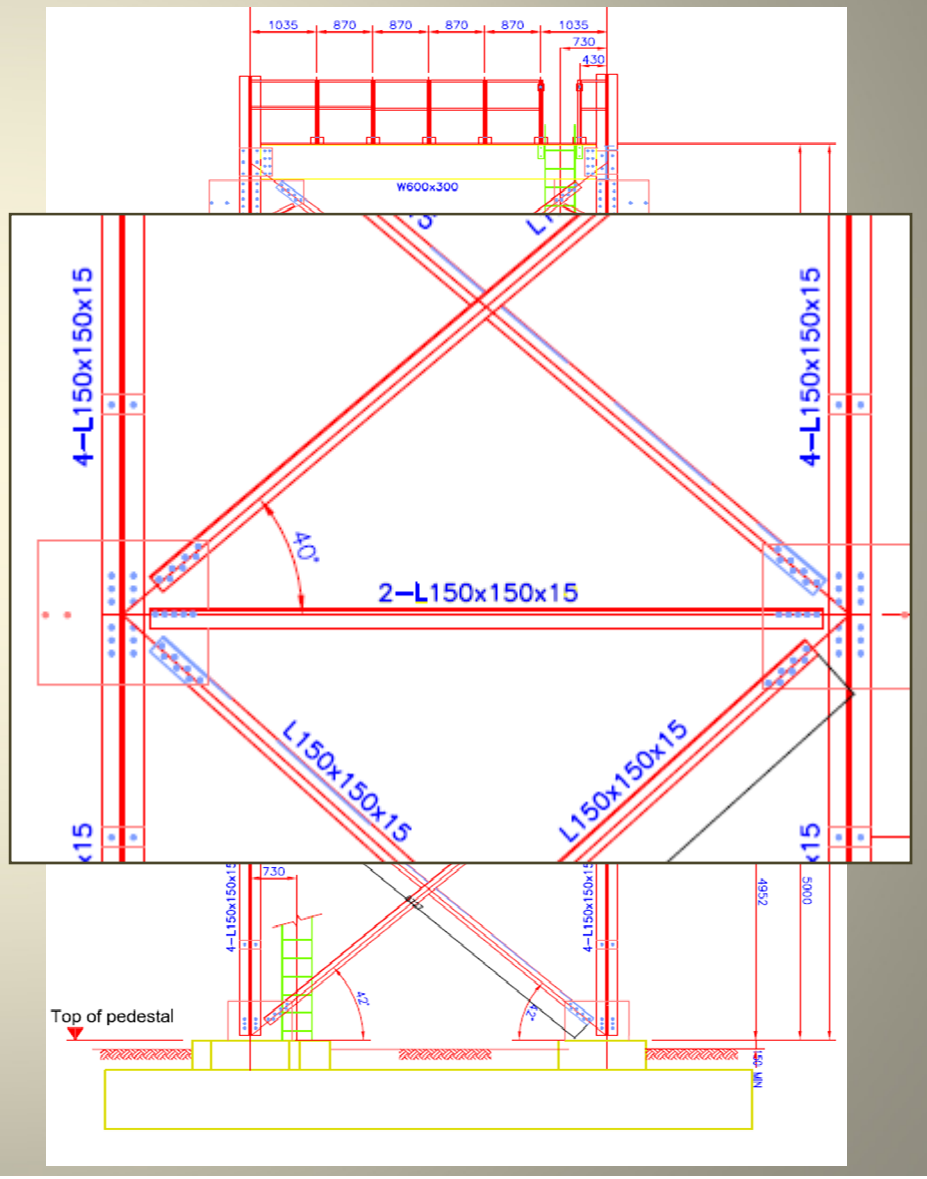
USAID FROM THE AMERICAN PEOPLE

SHOP DRAWING EXAMPLE | *CONSTRUCTION DRAWING& SHOP DRAWING*

Construction Drawing



Shop Drawing



SHOP DRAWING EXAMPLE | *PROJECT SPECIFICATIONS*

Sardar Girls High School
Kabul, Afghanistan

SSPC Paint 25	(1997; E 2004) Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
SSPC SP 3	(1982; E 2004) Power Tool Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning

1.2 SYSTEM DESCRIPTION

Provide the structural steel system, including shop primer, complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection

1.3 SUBMITTALS

Contractor shall submit the following using procedures as specified in the Contract Documents.:

SD-02 Shop Drawings

Fabrication drawings including description of connections

Load indicator washers

Non-Shrink Grout

Include test report for Class B primer.

SD-06 Test Reports

Class B coating

Bolts, nuts, and washers

Supply the certified manufacturer's mill reports which clearly show the applicable ASTM mechanical and chemical requirements together with the actual test results for the supplied fasteners.

USAID
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SHOP DRAWING EXAMPLE | *BROCHURE*

Abbasian
Noor
A N C C Construction Co Ltd & Construction Material Product

SCOPE OF SERVICE

ANCC is a sound construction company providing quality construction projects. In the past,ANCC has worked on a number of different project areas including:

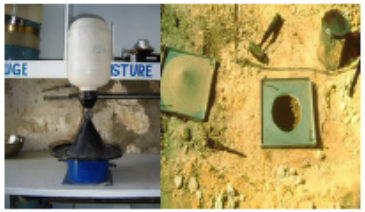
1. Commercial building.
2. Residential building.
3. Bridge construction.
4. Water supply.
5. Metallurgy.
6. Carpentry.

ANCC has the following testing facilities which have been established under the full supervision of the general construction manager. ANCC provides the following materials testing facilities:

1. SOIL TESTING

ANCC quality control is undertaken by the design department of ANCC. The ANCC has highly qualified technical staff and a well equipped laboratory. Quality assurance is one of the main goals of ANCC. If further information on quality control guidelines and forms and safety guidelines are needed these can be provided upon request.

- *Soil classification*
- *California Bearing Ratio (CBR)*
- *Standard penetration test (soil bearing capacity)*
- *Liquid limits*
- *Plastic limits*
- *Plasticity index*
- *Sieve analysis*
- *Mix dry density*
- *Field density*
- *Group index.*
- *Unite weight (dry, wet)*



2. Stone Testing Stone classification

- *Stone soundness (with sodium sulphate and magnesium sulphate).*
- *Stone abrasion test*
- *Water absorption test*
- *Freezing and thawing*
- *Unite weight*
- *Load bearing capacity (load crushing capacity)*
- *Strength*
- *Sieve analysis*

Abbasian
Noor
A N C C Construction Co Ltd & Construction Material Product

د افغانستان اسلامي جمهوريت
د سوداګرۍ او صنايعو وزارت
د مرکزي ثبت اداره

جمهوری اسلامی افغانستان
وزارت تجارت و صنایع
اداره ثبت مرکزی

Islamic Republic of Afghanistan
Ministry of Commerce and Industry
General Business Registry Office

تاریخ ثبت: 19-11-1390

17279

تصدیقنامه ثبت

Registration Certificate

TIN / نمبر تشخیص مالیه
700790801

Registration ID / نمبر ثبت
15130

This is to certify that Abasyan Noor Construction Co is an entity with business activity and subject to the effective Laws of Afghanistan

امضاء رئیس اداره ثبت مرکزی

SHOP DRAWING EXAMPLE | *LETTER OF TRANSMITTAL*

LETTER OF TRANSMITTAL

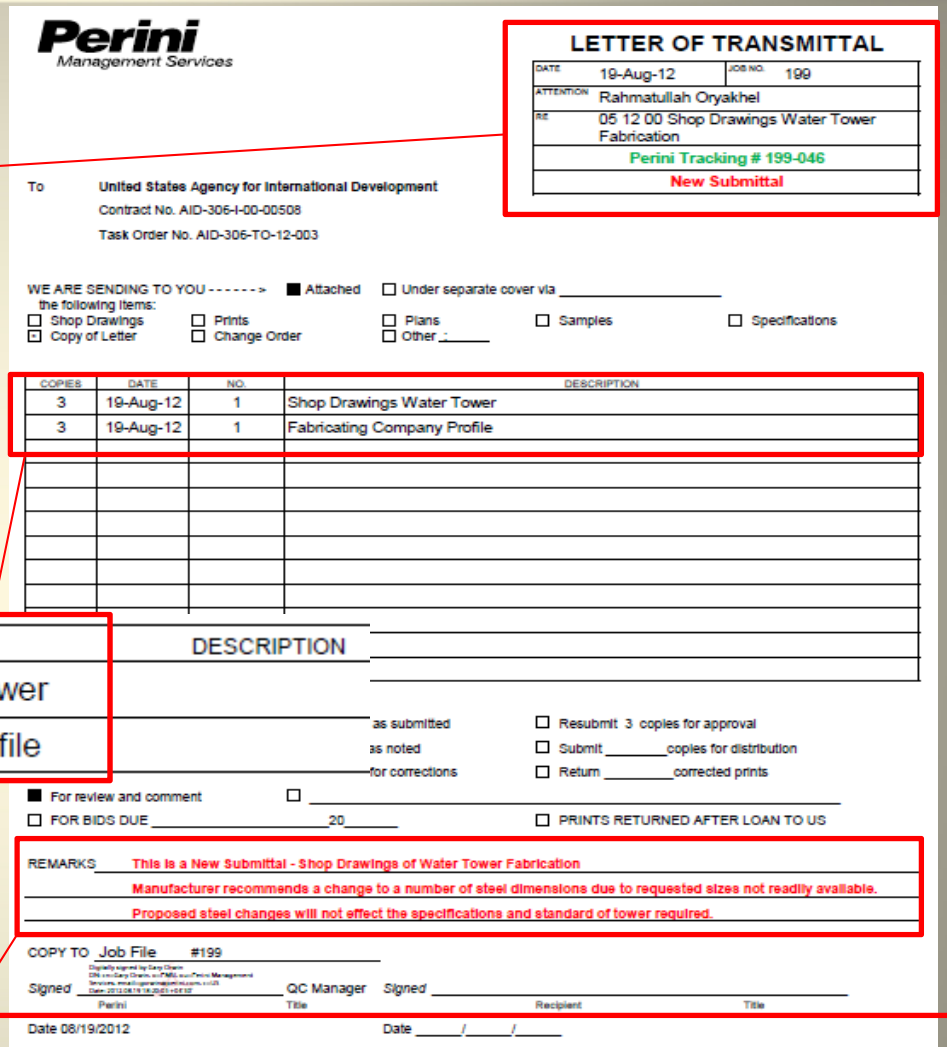
DATE	19-Aug-12	JOB NO.	199
ATTENTION	Rahmatullah Oryakhel		
RE	05 12 00 Shop Drawings Water Tower Fabrication		
Perini Tracking # 199-046			
New Submittal			

COPIES	DATE	NO.	DESCRIPTION
3	19-Aug-12	1	Shop Drawings Water Tower
3	19-Aug-12	1	Fabricating Company Profile

REMARKS This is a New Submittal - Shop Drawings of Water Tower Fabrication

Manufacturer recommends a change to a number of steel dimensions due to requested sizes not readily available.

Proposed steel changes will not effect the specifications and standard of tower required.



Perini Management Services

LETTER OF TRANSMITTAL

DATE 19-Aug-12 | JOB NO. 199

ATTENTION Rahmatullah Oryakhel

RE 05 12 00 Shop Drawings Water Tower Fabrication

Perini Tracking # 199-046

New Submittal

To United States Agency for International Development
Contract No. AID-306-I-00-00508
Task Order No. AID-306-TO-12-003

WE ARE SENDING TO YOU ------> ■ Attached ☐ Under separate cover via _____
the following items:
☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☑ Copy of Letter ☐ Change Order ☐ Other _____

COPIES	DATE	NO.	DESCRIPTION
3	19-Aug-12	1	Shop Drawings Water Tower
3	19-Aug-12	1	Fabricating Company Profile

☐ as submitted ☐ Resubmit 3 copies for approval
☐ as noted ☐ Submit _____ copies for distribution
☐ for corrections ☐ Return _____ corrected prints

■ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 20_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS This is a New Submittal - Shop Drawings of Water Tower Fabrication
Manufacturer recommends a change to a number of steel dimensions due to requested sizes not readily available.
Proposed steel changes will not effect the specifications and standard of tower required.

COPY TO Job File #199

Signed _____ QC Manager Signed _____
Perini Title Recipient Title

Date 08/19/2012 Date ____/____/____

SHOP DRAWING EXAMPLE | *Submittal Review*

Work Order No.	WO-LT-0006
Submittal No.	199-046

	No Exception Taken
	Make Corrections Noted
	Revise and Resubmit
X	Rejected

Corrections or comments made on fine shop drawings during this review do not relive the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

Tetra Tech, Inc.
1 Grant Street
Framingham, MA 01701-9005

Date: August 29, 2012 By: [redacted]

Comments:

1. Decreasing the dimension and size of steel members of the water tower are not acceptable without providing PE signed structural design analysis.
2. Tetra Tech can accept changing the size of members if you suggest a bigger size member.
3. No exception taken to the fabricating company profile.

TETRA TECH

e: August 29, 2012

Rahmatullah Oryakhel
AID Café Compound
at Massoud Road
ul, Afghanistan

WO-LT-0006 Sardar Girls High School, Submittal Review # 199-046, Shop wings of Water Tower and Fabrication Company Profile.

Work Order No.	WO-LT-0006
Submittal No.	199-046

	No Exception Taken
	Make Corrections Noted
	Revise and Resubmit
X	Rejected

Corrections or comments made on fine shop drawings during this review do not relive the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

Tetra Tech, Inc.
1 Grant Street
Framingham, MA 01701-9005

Date: August 29, 2012 By: Behroz Fazelpoor

BoQ item no 4.15 & 4.16

Specification: 05 12 00 STRUCTURAL STEEL

to S-17, Water Tower

g the dimension and size of steel members of the water tower are not e without providing PE signed structural design analysis.

h can accept changing the size of members if you suggest a bigger size

tion taken to the fabricating company profile.

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SHOP DRAWING EXAMPLE | *Tetra Tech Submittal Log*

SHOP DRAWING AND SAMPLE RECORD

DATE: 02/09/12
TETRA TECH ARCHITECTS & ENGINEERS PROJECT. NO.: WO-LT-0006

Date Received USAID	Title	BoQ Item	Specification Section	Drawing Number	Reviewer	Action				Date to USAID	Status
						No Exception Taken	Make Correction Noted	Revise and Resubmit	Rejected		
	Civil										
08/26/12	Bolted Steel Water Storage Tank	4.01	33 16 15	U-90-U-93	TT		X			08/29/12	Complete
08/26/12	UPVC Schedule 40 Gravity Sewer Pipe	N/A	N/A	N/A	TT	X				08/29/12	Complete
08/26/12	PVC Schedule 80 Water Pipe	N/A	N/A	N/A	TT	X				08/29/12	Complete
08/28/12	Shop Drawings of Water Tower and Fabrication Company Profile	4.15 & 4.16	05 12 00	S-10 & S-12-S-17	TT				X	08/29/12	Complete
08/29/12	Paint for Roads & Streets	6.03	32 17 23	C-12,C-13	TT	X				09/02/12	Complete
08/29/12	Well Installation Plan	4.03	33 20 00	U-30-U31	TT			X		09/02/12	Complete
08/30/12	Well Riser Pipe & Fittings	4.04	43 21 39	U-30-U31	TT					09/02/12	Complete
08/29/12	Aggregate Base Course Mix Design	2.02	32 11 23	C-30	TT					09/02/12	Complete
08/30/12	UPVC Schedule 40 Fittings-Gravity Sewer System- (Royal)	3.01, 3.02, 3.02A	33 30 00	U10 to U13	TT	X				09/03/12	Complete
08/30/12	PVC Schedule 80 Fittings-Water Distribution System- (Spears)	4.10,4.10A, 4.11, 4.12, 4.13	33 11 00	U10 to U13	TT	X				09/03/12	Complete

SHOP DRAWING AND SAMPLE RECORD

USAID
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Shop Drawing Review/Approval

General Responsibilities:

- Owner, contractor, and design professionals
- Legal claims
- Transfer responsibilities at different situations

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Shop Drawing Review/Approval

Contractors Responsibilities:

- Review and approve before submitting
- Coordination responsibilities
- QA/QC
- Special notes

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Shop Drawing Review/Approval

Design Professional Responsibilities:

- Review and approve
- Respond in timely manner
- Not responsible for dimensioning and quantities
- Not responsible for contractor's means/methods

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Shop Drawing Review/Approval

Liabilities:

- Construction claims
- Contractors liability
- Errors and omissions

USAID
FROM THE AMERICAN PEOPLE

Shop Drawing Review/Approval

Design Professional's Liabilities:

- Prompt response
- Conform
- Omissions
- Contractual duties

USAID
FROM THE AMERICAN PEOPLE

Conclusion

- Shop drawings fit into construction
- Book keeping
- Example of shop drawings
- Responsibilities and liabilities

USAID
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THANKS

USAID
FROM THE AMERICAN PEOPLE

Contact Info:

[redacted]

Appendix C

USAID Shadowing Summaries

USAID Visit Briefing: **December 03, 2012**

Visitors: [redacted]

The USAID shadowing program was another good experience for us. After the first day we had in USAID the most important thing that we got familiar with what exactly the USAID engineers are doing there and what are the USAID current projects, issues, and challenges.

We arrived at USAID about 1:30 p.m. and a few people were around. The first person we met was [redacted] (senior program manage). He talked about his personal story and a little bit about his career which took almost two hours. We could have been more efficient if we allocated less time on this issue. He also introduced us with USAID engineers' staff.

The other very interesting thing was joining a meeting which was attended by client (USAID), QC and QA engineers (IRD), Design group (Tetra Tech), and the under pressure one which was the contractor (Perini). I personally focused more on how they interact with each other, which questions arise, and how they respond. In short, I have found joining this meeting very useful which added to our experience. If we had another chance to attend such meetings, I think we need some information about the agenda of the meeting in advance.

After that we had a good discussion with [redacted] He explained about the current USAID projects and what USAID is doing. He also mentioned some of the upcoming challenges and also touched a about the highlights of the mentioned meeting. He described the issues in detail in a supportive manner and was explaining as if we were his colleagues which gave us a sense of responsibility.

At the end, [redacted]Manager) talked about the road maintenance that included:

- Importance of road maintenance
- Road maintenance policies in developed countries
- Afghanistan current road maintenance policies
- Future plans of USAID for Afghanistan road maintenance

He suggested having such session in the future on other topics such as cost estimation of big projects, etc. However he needs to be informed in advance. We think it is a great idea.

Below are some recommendations for future programs:

- Having a clear schedule of what we will cover and sharing it with USAID
- If possible participate actively more in the future meetings
- To know more about the USAID involved engineers (their field of work and skills)
- To have more sessions with [redacted] based on their availability
- Half day is fine

USAID Shadowing Program

[redacted]s visit at USAID:

First of all we want to thank USAID for this cooperative program which has facilitated us the straightforward opportunity to observe an organization's culture and experience operations in an area of our interest and to meet real people who represent a range of capability during the course of their everyday working activities.

We could meet certain engineers who spoke about their lives, their challenges, their relationship with project and the aspects which impact the construction phase of the project.

The first who we met was [redacted], who welcomed us to the Office of Economic Growth and Infrastructure (OEGI). He was a Road Engineer and described briefly about his career and involvement in road project. He was great, smiley and tried to keep the visitors happy.

[redacted] PE, who was selected to guide us meet the engineers. First he explained the running projects of USAID and the responsibilities of USAID Engineers, which was our main focus. Afterward, he talked about his own career, showed us the report he made on a site visit of specified project and the gantt chart which was done in Microsoft Project. We had some question regarding how to make a technical report and got an excellent guidance from him.

[redacted] took us to the road department so that we could have information about their Road projects. There we met [redacted] (who really impressed us of his own career; he has a wonderful character, very humble and friendly personality, hope we could meet him in the near future). He explained in detail about the Khost-Gardez joining road which was about 100km long and about 63km was already constructed. He explained the problems they faced during construction and some important aspect and factors affecting the construction and maintenance of road which were:

- Topographic condition of the area
- Environmental impact
- Weather condition
- Accessibility of construction material
- Hydraulic aspects

Another visit was with an Engineer in USAID who explained the scope of work of the Salang Tunnel, the purpose of this project was to select most economical and reliable route to connect Kabul to the North provinces of Afghanistan, they were just to give the options but the Government was to select the most efficient route for the purposed project. This project seemed to be really interesting for us.

Then [redacted] took us to an ongoing meeting between USAID and black & veatch, they were discussing about Kajaki dam power plant, to supply power to Helmand and Kandahar, they were doing the cost estimation of the project, during the meeting we had a great interaction with the people in the room and had some questions which they answered with pleasant. So this meeting added some useful information to our experience.

To this end we talked with [redacted] he ones again introduced USAID in briefly manner. Talked about his daily work he does in his office and entertained us a lot. He's a really good person and our favorite too.

We want to thank [redacted] for his time spent with us, he didn’t let us get bored, we really had a great time there, if we didn’t we wouldn’t ask for another meeting.

USAID/Afghanistan
U.S. Embassy Cafe Compound
Great Massoud Road
Kabul, Afghanistan
Tel: 202.216.6288
http://afghanistan.usaid.gov